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Ki-Ook Park

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EXAMINER

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PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

<b>Office Action Summary</b>	<b>Application No.</b> 09/892,790	<b>Applicant(s)</b> PARK ET AL.	
	<b>Examiner</b> William J. Klimowicz	<b>Art Unit</b> 2627	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 14 May 2008.
- 2a) ☒ This action is **FINAL**.                      2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 21-60 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 21-23, 25, 26, 30-34, 36, 37, 41-44, 46, 47 and 51-60 is/are rejected.
- 7) ☒ Claim(s) 24, 27-29, 35, 38-40, 45 and 48-50 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \*    c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |  |   |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)                     | 4) <input type="checkbox"/> Interview Summary (PTO-413)           |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____                                      |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)          | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____  | 6) <input type="checkbox"/> Other: _____                          |

## DETAILED ACTION

### *Claim Rejections - 35 USC § 102*

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

### **Rejection of Claims 21-23, 25, 26, 30-34, 36, 37, 41-44, 46, 47, 51-52, 54, 55, 57, 58, 60 under 35 U.S.C. 102(e) as being anticipated by Chhabra (US 5,831,791).**

Claims 21-23, 25, 26, 30-34, 36, 37, 41-44, 46, 47, 51-52, 54, 55, 57, 58, 60 are rejected under 35 U.S.C. 102(e) as being anticipated by Chhabra (US 5,831,791).

At the outset, the Examiner directs the attention of the reader of this Office action to see Examiner's marked-up copy of FIG. 13b of Chhabra (US 5,831,791) previously enclosed at the end of the Office action mailed on February 14, 2008.

As per claim 21, Chhabra (US 5,831,791) discloses a negative pressure air bearing slider (e.g., 200 - see FIGS. 13a, 13b; see also appended Examiner's marked-up copy of FIG. 13b of Chhabra (US 5,831,791) previously enclosed at the end of the Office action mailed on February 14, 2008) having a negative pressure cavity (C2), comprising: a body with a principal surface

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(PS) disposed to confront a recording surface of a recording medium, said principal surface (PS) having a lead portion (LP) and a rear portion (RP), said lead portion (LP) being spaced upstream from said rear portion relative to a rotational direction (RD) of any recording medium confronted by said slider (200), said lead portion (LP) having a front edge (FE), said rear portion (RP) having a rear edge (RE), said front edge (FE) and said rear edge (RE) together defining boundaries of said principal surface (PS) transverse to said front edge (FE) and said rear edge (RE) in a longitudinal direction (LD) of said slider body (200); and a U-shaped air bearing platform (flat facing, non-tapered portion of rails 204 205, including the non-tapered portions 204, 205, which collectively form the **U-shaped** air bearing platform); the U-shaped air bearing platform spaced apart from said front edge (FE) (by at least the slanted, non-flat leading edge taper portion of rails 204, 205 - see FIG. 13B) circumscribing a majority of said principal surface (PS) while defining a negative pressure cavity (C2) on said principal surface (PS), said U-shaped air bearing platform (U-shaped portions of 204, 205) comprising not more than two separate air bearing platforms (e.g., each flat, non-tapered portion of rail, 204 and 205, is considered a separate air bearing platform) each extending rearwardly toward said rear portion (RP) of said principal surface (PS) and respectively terminating at a first rear termination (233) and a second rear termination (233') to form trailing terminal ends of said negative pressure cavity spaced-apart from said rear portion (RP), at least one of said not more than two separate air bearing platforms (U-shaped portions of 204, 205) including a sidewall contiguous with one of said boundaries (note that both 204 and 205 form a contiguous sidewall with slider edge at boundary); at least one of said first rear termination (233) and said second rear termination

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(233') not coinciding with said rear edge (RE), and being disposed upstream of said rear edge (RE) relative to said rotational direction (RD) of said recording medium.

As per claims 22, 43, further comprising: a gap (C3) disposed within said U-shaped air bearing platform (U-shaped portions of 204, 205).

As per claims 23, 44, wherein: said gap (C3) is centered with respect to a longitudinal axis of said slider body (200).

As per claims 25, 46, further comprising: a recessed step (C3) disposed within said U-shaped air bearing platform (U-shaped portions of 204, 205) - note that the recess (C#) steps or extends all the way down to the principal surface (PS)).

As per claims 26, 47, wherein: said recessed step (C3) is centered with respect to a longitudinal axis (LA) of said slider body (200).

As per claims 30, 41, 51, further comprising: a rear air bearing platform (227) accommodating mounting of a transducer (see FIG. 13b), said rear air bearing platform (227) being spaced downstream of said U-shaped air bearing platform (U-shaped portions of 204, 205) relative to a rotational direction (RD) of said recording medium, and being centered with respect to a longitudinal axis (LA) of said slider body (200).

Additionally, as per claim 31, Chhabra (US 5,831,791) also discloses the principal surface (PS) defining a first plane tangential to a first direction (FD) - i.e., the plane of the principal surface (PS) and the U-shaped air bearing platform (flat facing, non-tapered portion of rails 204 205, including the non-tapered portions 204, 205, which collectively form the U-

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**shaped** air bearing platform) having a plurality of air bearing surfaces (U-shaped portions of 204, 205) embracing a majority of said principal surface (PS) while surrounding the negative pressure cavity (C2) and defining a second plane tangential to said first direction (FD) - i.e., the plane of the upper flat surfaces of (204, 205) spaced away from the principal surface (PS)), said U-shaped air bearing platform (U-shaped portions of 204, 205) comprising not more than two separate air bearing platforms (U-shaped portions of 204 and 205) each extending from said lead portion (LP) rearwardly toward said rear portion (RP) and respectively terminating at the first rear termination (233) and the second rear termination (233'), at least one of said not more than two separate air bearing platforms (non-tapered, U-shaped flat portions of 204, 205) extending from an edge of one of said boundaries (that is, 204 and 205) both extend right up to the side edge of the slider); at least one of said air bearing platforms being spaced apart from said front edge (FE) (by at least the slanted, non-flat leading edge taper portion of rails 204, 205 - see FIG. 13B); at least one of a surface between said first rear termination (233) and said rear edge (RE) and a surface between said second rear termination (233') and said rear edge (RE) being in said first plane (i.e., the plane of the principal surface (PS) - see FIG. 13b).

As per claim 32, wherein said U-shaped air bearing platform (non-tapered, U-shaped flat portions of 204, 205) further comprises: a cross rail portion (portion of (204, 205) that extend toward each other as seen I FIGS. 13a, 13b) extending generally laterally across said principal surface (PS).

As per claim 33, further comprising: a gap (C3) disposed within said cross rail portion.

As per claim 34, wherein: said gap (C3) is centered with respect to a longitudinal axis (LA) of said slider body (200).

As per claim 36, further comprising: a recessed step (C3 - not that C# steps or extends down to the principal surface (PS)) disposed within said cross rail portion.

As per claim 37, wherein: said recessed step (C3) is centered with respect to a longitudinal axis (LA) of said slider body (200).

Additionally, as per claim 42, Chhabra (US 5,831,791) also discloses wherein the longitudinal direction (LD) of said slider (200) extends and forms a tangent to said rotational direction (RD), said U-shaped air bearing platform (non-tapered, U-shaped flat portions of 204, 205) comprising the not more than two separate air bearing platforms (non-tapered, U-shaped flat portions of 204, 205) each extending from locations spaced-apart from said front edge (FE) (by at least the slanted, non-flat leading edge taper portion of rails 204, 205 - see FIG. 13B) and extending rearwardly toward said rear portion (RP) of said principal surface (PS) and respectively forming a first air bearing surface (surface of 204) terminating in a first side wall portion (e.g., side wall portion of (204) at end of (204) and contiguous with side edge of slider body as seen in FIGS. 13a, 13b)) and forming a second air bearing surface (surface of (205)) terminating in a second side wall portion (e.g., side wall portion of (205) at end of (205) and contiguous with side edge of slider body as seen in FIGS. 13a, 13b)), at least one of said not more than two separate air bearing platforms including a sidewall (e.g., another portion of the side wall portion of (204 or 205) at end of (204 or 205) and contiguous with side edge of slider body as seen in FIGS. 13a, 13b)) extending from one of said boundaries, with said U-shaped

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platform (non-tapered, U-shaped flat portions of 204, 205) comprising an arcuately shaped front wall (portion of rails (204) and (205) which extend toward each other) oriented toward said lead portion (LP), at least one of said not more than two separate air bearing platforms (non-tapered, U-shaped flat portions of 204, 205) extending from an edge (side edge of slider body) of one of said boundaries.

Additionally, as per claim 52, Chhabra (US 5,831,791) additionally discloses said principal surface (PS) having a lead portion (LP) separated from a rear portion (RP) by a central portion (CP), said lead portion (LP) and said central portion (CP) being spaced upstream from said rear portion (RP) relative to a rotational direction (RD) of any recording medium confronted by said slider, said lead portion (LP) having a front edge (FE), said rear portion (RP) having a rear edge (RE), said front edge (FE) and said rear edge (RE) connected together by longitudinal sides of said principal surface (PS) in a longitudinal direction (LD) of said slider body (200); and a plurality of arcuately shaped arms (non-tapered, U-shaped flat portions of 204, 205) each having distal ends extending from opposite ones of said longitudinal sides curving inwardly across (see where (204, 205) curve inward and nearly meet at (C3)) said central portion (CP) of said principal surface (PS) with spaced-apart proximal facing ends (at C3) of said arms (non-tapered, U-shaped flat portions of 204, 205) together forming a U-shaped air bearing platform (non-tapered, U-shaped flat portions of 204, 205) located between said longitudinal sides to separate a negative pressure cavity (C2) defined by said arms (non-tapered, U-shaped flat portions of 204, 205) on said principal surface (PS) from said longitudinal sides, at least one of said arms (non-tapered, U-shaped flat portions of 204, 205) extending from an edge (side edge of slider) of one of said longitudinal sides; at least one of said arms having a proximal end spaced-



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apart from said front edge (FE) (by at least the slanted, non-flat leading edge taper portion of rails 204, 205 - see FIG. 13B); a distal end (233, 233') of at least one of said arms (non-tapered, U-shaped flat portions of 204, 205) forming a terminal end wholly within said central portion (CP) and spaced-apart from said rear portion (RP).

As per claims 54, 57, 60, further comprising said arms (non-tapered, U-shaped flat portions of 204, 205) adjoining (or bordering) said longitudinal sides (sides of the slider body (200)).

Additionally, as per claim 55, Chhabra (US 5,831,791) also discloses the plurality of arcuately shaped arms (non-tapered, U-shaped flat portions of 204, 205) embracing a majority of said principal surface (PS) and each having distal ends extending from opposite ones of said longitudinal sides arcuately inwardly across said principal surface (PS) with spaced-apart proximal facing ends (at gap C3) of said arms (non-tapered, U-shaped flat portions of 204, 205) together forming a U-shaped air bearing platform (non-tapered, U-shaped flat portions of 204, 205) located between said longitudinal sides to separate a negative pressure cavity (C2) defined by said arms (non-tapered, U-shaped flat portions of 204, 205) on said principal surface (PS) from said longitudinal sides; at least one of said arcuately shaped arms (non-tapered, U-shaped flat portions of 204, 205) closest to said front edge (FE), being spaced apart from said front edge (FE) (by at least the slanted, non-flat leading edge taper portion of rails 204, 205 - see FIG. 13B); a distal end of at least one of said arms (non-tapered, U-shaped flat portions of 204, 205) forming a terminal end wholly within said central portion (CP) and spaced-apart from said rear portion (RP) .

Additionally, as per claim 58, said central portion (CP) being formed by opposite longitudinal sides separated by a longitudinal center (center area between rails (204, 205)) and bounded by said longitudinal edges (side of slider edges); and a plurality of arcuately shaped arms (non-tapered, U-shaped flat portions of 204, 205) each having distal ends extending from opposite ones of said longitudinal sides curving inwardly across said central portion (CP) of said principal surface (PS) with spaced-apart proximal facing ends of said arms together forming a U-shaped air bearing platform (non-tapered, U-shaped flat portions of 204, 205) located between said longitudinal sides to separate a negative pressure cavity (at (C2)) defined by said arms (non-tapered, U-shaped flat portions of 204, 205) on said principal surface (PS) from said longitudinal sides (sides of the slider body (200)); said U-shaped air bearing platform (non-tapered, U-shaped flat portions of 204, 205) being spaced-apart from said front edge (FE) (by at least the slanted, non-flat leading edge taper portion of rails 204, 205 - see FIG. 13B); at least one of said distal ends forming a terminal end (233, 233') wholly within said central portion (CP) and spaced-apart from said rear portion (RP).

**Rejection of Claims 52-60 under 35 U.S.C. 102(e) as being anticipated by Crane et al.**

**(US 5,721,650).**

At the outset, the Examiner directs the attention of the reader of this Office action to see Examiner's marked-up copy of FIG. 10A of Crane et al. (US 5,721,650) previously enclosed at the end of the Office action mailed on February 14, 2008.

Claims 52-60 are rejected under 35 U.S.C. 102(e) as being anticipated by Crane et al. (US 5,721,650).

As per claim 52, Crane et al. (US 5,721,650) discloses a negative pressure air bearing slider (FIG. 10A; see also appended Examiner's marked-up copy of FIG. 10A of Crane et al. (US 5,721,650) at the end of this Office action)) having a negative pressure cavity (100), comprising: a body with a principal surface disposed to confront a recording surface of a recording medium, said principal surface (PS) having a lead portion (LP) separated from a rear portion (RP) by a central portion (CP), said lead portion (LP) and said central portion (CP) being spaced upstream from said rear portion (RP) relative to a rotational direction of any recording medium confronted by said slider (70), said lead portion (LP) having a front edge (FE), said rear portion (RP) having a rear edge (RE), said front edge (FE) and said rear edge (RE) connected together by longitudinal sides (sides of slider (70)) of said principal surface in a longitudinal direction (LD) of said slider body (70); and a plurality of arcuately shaped arms (82, 84) - note that the arms do not include the lapped leading edge taper (102) as seen in FIG. 3a and 10A of Crane et al. (US 5,721,650) - the arms (82, 84) each having distal ends extending from opposite ones of said longitudinal sides curving inwardly across said central portion (CP) of said principal surface (PS) with spaced-apart proximal facing ends (at 280 on each side - see FIG. 10A) of said arms (82, 84) together forming a U-shaped air bearing platform (82, 84) located between said longitudinal sides to separate a negative pressure cavity (at 100) defined by said arms (82, 84) on said principal surface (PS)

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from said longitudinal sides, at least one of said arms (82, 84) extending from an edge of one of said longitudinal sides; at least one of said arms (82, 84) having a proximal end spaced-apart from said front edge by at least the leading edge taper (102); a distal end of at least one of said arms (82, 84) forming a terminal end (TE) wholly within said central portion (CP) and spaced-apart from said rear portion (RP).

As per claims 53, 56, 59, comprising a cross-rail (CR) portion of said platform extending generally laterally across said principal surface (PS) and connecting said proximal facing ends (280, 280).

As per claims 54, 57, 60, further comprising said arms (82, 84) adjoining said longitudinal sides (i.e., sides of the slider body) and at least one of said arcuately shaped arms (82, 84) closest to said front edge (FE), being spaced-apart from said front edge (FE) by at least said leading edge taper (102).

Additionally, as per claim 55, the plurality of arcuately shaped arms (82, 84) embracing a majority of said principal surface (PS); a distal end of at least one of said arms forming a terminal end wholly within said central portion and spaced-apart from said rear portion.

Additionally, as per claim 58, said central portion (CP) being formed by opposite longitudinal sides separated by a longitudinal center and bounded by said longitudinal edges and said U-shaped air bearing platform (82, 84) being spaced-apart from said front edge (FE) by at least said leading edge taper (102).

***Response to Arguments***

Applicants' arguments filed May 14, 2008 have been fully considered but they are not persuasive.

As to the rejection of claims 21-23, 25, 26, 30-34, 36, 37, 41-44, 46, 47, 51-52, 54, 55, 57, 58, 60 under 35 U.S.C. 102(e) as being anticipated by Chhabra (US 5,831,791), the Applicant alleges that Chhabra (US 5,831,791) fails to anticipate the amended independent claims since, in the Applicants' opinion, Chhabra (US 5,831,791) fails to provide a U-shaped air bearing platform spaced-apart from the front edge of the slider.

The Examiner respectfully disagrees. More concretely, as set forth in the rejection, *supra*, Chhabra (US 5,831,791) discloses a U-shaped air bearing platform which is indeed factually spaced apart from the front edge of the slider body. That is, the U-shaped air bearing platform is formed by the ***flat facing, non-tapered portion of rails 204 205***, including the non-tapered portions 204, 205, which collectively form the **U-shaped** air bearing platform.

The U-shaped air bearing platform is spaced apart from said front edge (FE) by at least the slanted, non-flat leading edge taper portion of rails 204, 205 - see FIG. 13B - and circumscribes a majority of said principal surface (PS) while defining a negative pressure cavity (C2) on said principal surface (PS).

Applicants have apparently read too broadly into the Examiner's interpretation as to what is reasonably considered the U-shaped platform of Chhabra (US 5,831,791). The Applicants believe that the leading edge tapered portions of the rails should be considered as part of the U-shaped platform of Chhabra (US 5,831,791), but the Examiner disagrees. The leading edge tapers, as is well known in the art, are used in assisting the slider during lifting-off of a magnetic

disk during initial start-up, whereas the flat, not tapered portion of slider rails are used in keeping the slider floating during normal flying operations. Moreover, the leading edge tapers are not construed as part of the U-shaped platform, since the platform would become an H-shaped surface.

In summation, the Examiner has not considered the leading edge tapers of the slider rails as being a part of the U-shaped platform since: (1) they are not flat; (2) they are not in the same plane as the flat portion of the U-shaped air bearing platform, and (3) since the non-tapered flat rail portions (U-shaped air bearing platform) of the slider are the air bearing surfaces used in primarily floating the slider over a spinning recording medium.

Applicants similarly allege a similar distinction between Crane et al. (US 5,721,650) and the amended claims, and the Examiner's arguments regarding Chhabra (US 5,831,791) are equally as applicable to Crane et al. (US 5,721,650), as well.

That is, Crane et al. (US 5,721,650) discloses a plurality of arcuately shaped arms (82, 84); arms which do not include the lapped leading edge taper (102) as seen in FIG. 3a and 10A of Crane et al. (US 5,721,650). Moreover, the arms (82, 84) each have a proximal end spaced-apart from said front edge by at least the leading edge taper (102).

#### ***Allowable Subject Matter***

Claims 24, 27-29, 35, 38-40, 45, 48-50 are tentatively objected to as being dependent upon a rejected base claim, but, pending an updated search, amendments or arguments presented by the Applicant and considered by the Examiner in reply to this office communication, would

be favorably considered if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

### ***Conclusion***

**THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to William J. Klimowicz whose telephone number is (571) 272-7577. The examiner can normally be reached on Monday-Friday (7:30AM-6:00PM).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Joseph H. Feild can be reached on (571) 272-4090. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/William J. Klimowicz/  
Primary Examiner, Art Unit 2627